

EBD431e

Indoor/Outdoor Ball Camera

700TVL, 3-Axis, IP66, IR

User's Manual



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Release Date: August, 2012

CAUTIONS

1. Do not install the camera near electric or magnetic fields.
2. Never disassemble the camera beyond the recommendations in this manual nor introduce materials other than those recommended herein.
3. Try to avoid facing the camera toward the sun.
4. Keep the power cable away from water and other liquids and never touch the power cord with wet hands.
5. Never install the camera in areas exposed to oil, gas or solvents.
6. Do not operate the camera beyond the specified temperature or humidity. Use the camera at temperatures within -10°C~50°C (14°F~122°F) and humidity between 20%~ 80%; this device is not rated as submersible.
7. Determine the **polarity** of the power adapter pigtail before connecting the camera to the power source. The input power source is **12V DC**.

1. INTRODUCTION

The EBD431e Ball camera is equipped with a 1/3" Sony 960H CCD image sensor providing resolution of 700 TVL. Featured with the Digital Wide Dynamic Range (D-WDR) function, the camera can provide clear images even under back light circumstances where intensity of illumination can vary excessively.

The EBD431e comes with 36 IR LEDs, supporting up to 20m (~65ft.) IR distance in night vision. The removable IR cut filter allows the camera to provide True Day/Night function. The camera can work in both indoor and outdoor environments. The IP66-rating and vandal proof housing make it suitable for outdoor use.

Model Name	Scanning System
EBD431e/N	NTSC
EBD431e/P	PAL
Note: The models vary among countries. Please visit EverFocus regional Websites for detailed ordering information.	

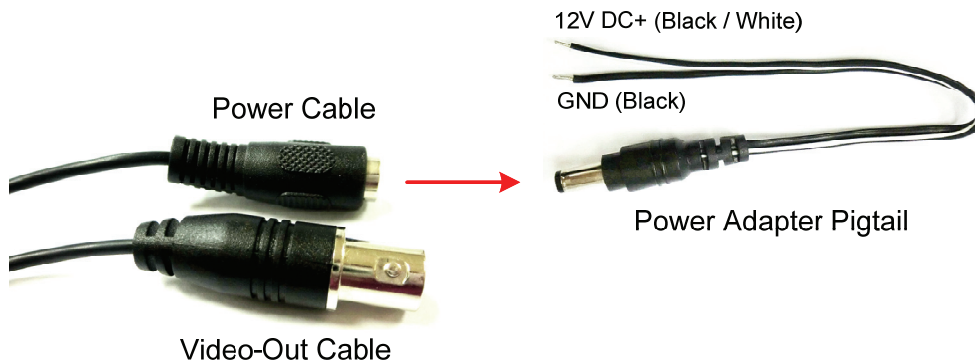
1.1 FEATURES

- 3-Axis, Sony 1/3" 960H CCD Sensor, 700 TVL resolution
- Sony Effio-E platform to provide advanced camera functions
- Varifocal lens f=2.8~10.5mm
- 36 IR LEDs reach up to 20m (~65ft.) IR distance
- True Day/Night with removable IR cut filter
- Easy-to-use external 5-axis joystick controller for OSD menu settings
- Supports double glass
- D-WDR function based on Sony's ATR technology
- DNR function that reduces image noise to save storage space
- High sensitivity, low smear, high anti-blooming and high S/N ratio for high performance video
- Built-in Auto Electronic Shutter (AES), Auto Gain Control (AGC) and Auto White Balance (AWB)

1.2 PACKAGE CONTENTS

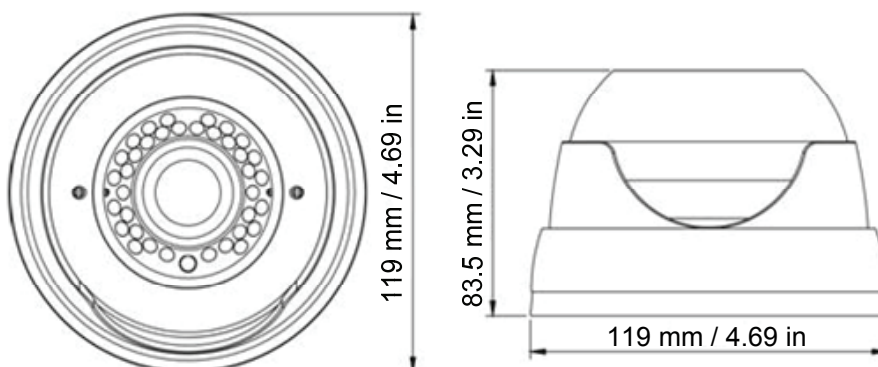
- | | |
|------------------------------|--|
| 1. EBD431e camera x 1 | 2. Mounting Template x 1 |
| 3. User Manual x 1 | 4. Accessory kit x 1 (4 Screws, 4 Anchors, |
| 5. Power Adapter Pigtail x 1 | 1 Adjustment Screw, 1 Hexagon Wrench) |

1.3 CABLE DEFINITIONS



Cable Name	Description
Power Cable	Connects to the 12V DC power source. You can optionally use the supplied Power Adapter Pigtail or a power adapter.
Video-Out Cable (BNC)	Connects to a DVR or a portable monitor for adjusting camera angles.
Power Adapter Pigtail	Connects one end to the Power Cable, and the other end to the 12V DC power source (black wire to ground end; black / white wire to positive end).

1.4 DIMENSIONS

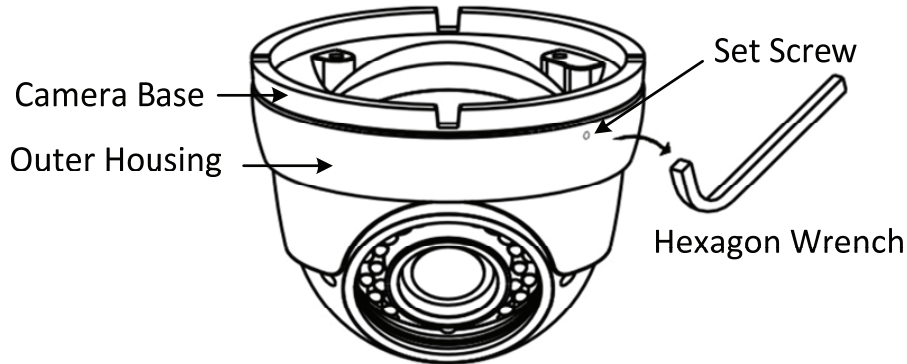


2. SPECIFICATIONS

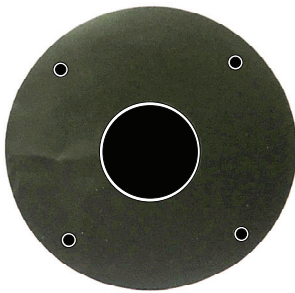
Pickup Device	1/3" SONY 960H CCD
Video Format	NTSC or PAL (depends on model selected)
Picture Elements	1020 x 508 (NTSC), 1020 x 596 (PAL)
Horizontal Resolution	700 TVL
Sensitivity	0.01 Lux / F=1.2; 0 Lux IR On
S/N Ratio	Over 50dB (AGC off)
Electronic Shutter	1/50 (1/60) ~ 1/100,000 sec.
Video Output	BNC 1.0 Vp-p ,75ohm
Gamma Correction	0.45
Lens Type	Varifocal Lens f=2.8~10.5mm / F=1.2
Auto Gain Control	Yes
White Balance	Auto
Sync. Mode	Internal Sync.
True Day/Night	Yes, True Day/Night auto switch
DNR	Yes
D-WDR	Auto (Sony ATR)
IR LED	36 Units IR LED
IR Wavelength	850nm
IR Distance	20m (~65ft.)
OSD Menu	Yes (English/Japanese/German/French/Russian /Portuguese/Spanish/Simplified Chinese)
Power Source	12V DC
Power Consumption	12V DC: 310mA / 4W max.
Operating Temperature	-10°C~50°C / 14°F~122°F
Humidity	20% ~ 80% non-condensing
Dimensions (O.D x H)	119 x 83.5 mm / 4.69 x 3.29 in
Weight	675 g / 1.5 lb
Certifications	CE / FCC

3. INSTALLATION & OPERATION

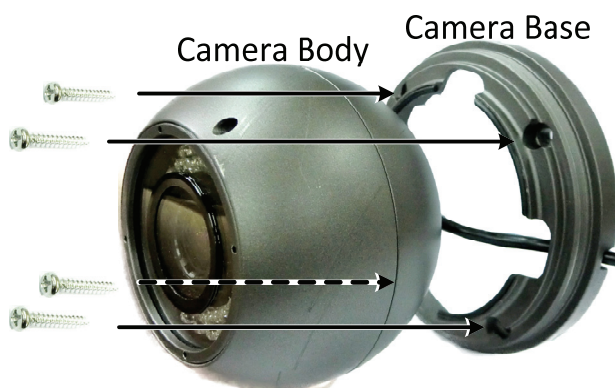
1. Unscrew the Set Screw using the supplied Hexagon Wrench and then remove the Outer Housing from the Camera Base.



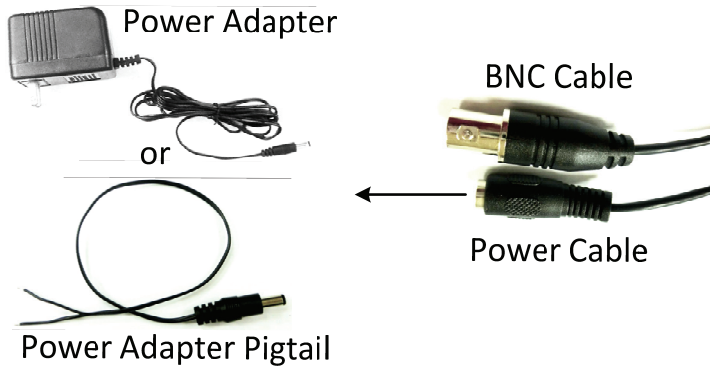
2. Paste the supplied mounting template onto a desired location on the ceiling / wall. Drill the four small holes for screwing the camera with the supplied Screws and Anchors, and the circle in the middle only if you wish to run the wires into the wall.



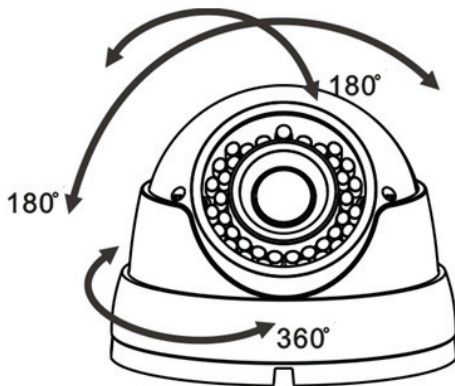
3. Insert the supplied 4 Anchors into the 4 holes on the ceiling / wall.
4. Screw the Camera Base to the ceiling / wall using the supplied 4 Screws.
 - a. If you want to wire the cables from the side cut of the Camera Base, run the cables through the Camera Base first, attach and then screw the Camera Base to the ceiling / wall.



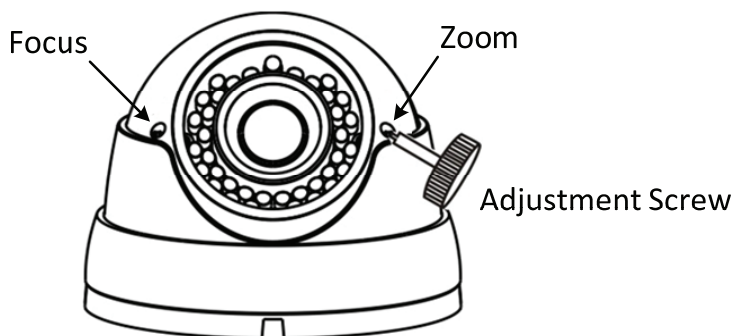
- b. If you want to wire the cables through the wall, attach and then screw the Camera Base to the ceiling / wall. Attach the Camera Body to the Camera Base.
5. Connect the camera to the 12V DC power source using the supplied Power Adapter Pigtail or a power adapter.



6. Connect the camera to a DVR or a portable monitor using the Video-Out cable for viewing the camera view while adjusting camera focus, zoom and angles.
7. Screw back the Outer Housing and adjust the camera angle simultaneously.



8. Adjust camera focus / zoom using the supplied Adjustment Screw.

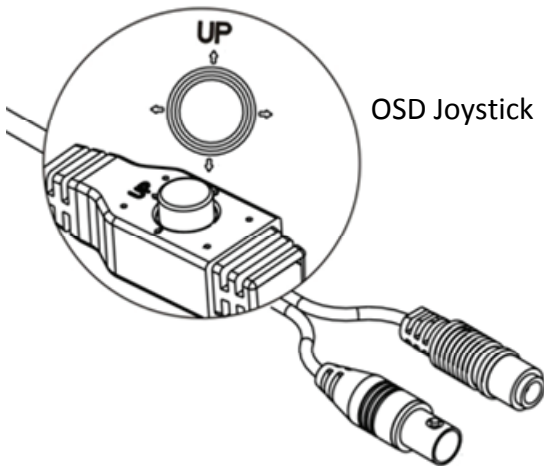


9. Screw back the Set Screw using the supplied Hexagon Wrench.

4. Configuration in the OSD Menu

You can use the external 5-Axis OSD Joystick controller to configure camera settings in the OSD menu.

4.1 OSD Joystick



- Push the Joystick up / down to select between menu items.
- Push the Joystick left / right to adjust the level of the selected item.
- Press the Joystick to enter the submenu or exit the OSD Setup Menu.

4.2 OSD Setup Menu

OSD Setup Menu page 1		OSD Setup Menu page 2	
LENS	AUTO↵	DAY/ NIGHT	AUTO*
SHUTTER/ AGC	AUTO↵	PRIVACY	OFF
WHITE BAL	ATW	MOTION DET	OFF
BACKLIGHT	OFF	CAMERA ID	OFF
ATR	OFF	SYNC	INT
NR	↵	LANGUAGE	ENGLISH
PICT ADJUST	↵	CAMERA RESET	
NEXT↵		BACK⏮	
EXIT↵	SAVE ALL	EXIT⏮	SAVE ALL

4.2.1 LENS

- **MAUNAL:** No adjustment (Read Only).
- **AUTO**

AUTO	TYPE : DC
	MODE : AUTO/ OPEN /CLOSE
	SPEED : 000~255

MODE:

AUTO: Camera automatically controls the lens.

OPEN: Lens fully open.

CLOSE: Lens fully closed.

SPEED: Speed of the lens.

4.2.2 SHUTTER/AGC

- **AUTO**

AUTO	HIGH LUMINANCE
	MODE : SHUT+AUTO IRIS / AUTO IRIS / SHUT BRIGHTNESS : 000~255
	LOW LUMINANCE MODE : AGC / OFF BRIGHTNESS : x0.25 、 x0.50 、 x0.75 、 x1.00

MODE:

SHUT+AUTO IRIS: Exposure is controlled by auto electronic shutter combined with auto iris.

AUTO IRIS: Exposure controlled by auto iris.

SHUT: Exposure controlled by electronic shutter.

- **MANUAL**

MANUAL	MODE : SHUT+AGC
	SHUTTER : NTSC : 1/60, 1/100, 1/250, 1/500, 1/1000, 1/2000, 1/4000, 1/10000 PAL : 1/50, 1/120, 1/250, 1/500, 1/1000, 1/2000, 1/4000, 1/10000
	AGC : 6.00 、 12.00 、 18.00 、 24.00 、 30.00 、 36.00 、 42.00 、 44.80

4.2.3 WHITE BAL

- **ATW (Auto White Balance)**

ATW	SPEED : 000~255
	DELAY CNT : 000~255
	ATW FRAME : x0.50 、 x1.00 、 x1.50 、 x2.00
	ENVIRONMENT : INDOOR 、 OUTDOOR

SPEED: ATW Speed

DELAY CNT: ATW Delay Time

ATW FRAME: ATW Frame Range Setup

ENVIRONMENT: ATW Environment Range Setup

- **PUSH**

The function will keep on detecting the Color Temperature, and then keeps saving up the parameter to the camera.

- **USER1**

USER1	B-GAIN : 000~255
	R-GAIN : 000~255

- **USER2**

USER2	B-GAIN : 000~255
	R-GAIN : 000~255

- **MANUAL**

MANUAL	LEVEL : 19~54
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- **ANTI CR**

The function can reduce the color rolling issue, and it is the same with CRS (Color Rolling Support) function.

- **PUSH LOCK**

The function will detect the Color Temperature to save into the camera.

4.2.4 BACKLIGHT

- **OFF:** Disable the Backlight function.
- **BLC:** Enable the function of Back Light Compensation, using BLC Smart detection method.
- **HLC:** Enable the function of High Light Compensation.

Note: Please avoid enabling the ATR and Backlight functions simultaneously.

4.2.5 ATR (Adaptive Tone Reproduction)

- **OFF:** Disable the ATR function.
- **ON**

LUMINANCE	LOW 、 MID 、 HIGH
CONTRAST	LOW 、 MIDLOW 、 MID 、 MIDHIGH 、 HIGH

Note: Please avoid enabling the **ATR** and **Backlight** functions simultaneously.

4.2.6 NR (Noise Reduction)

NR MODE	Y/C 、 Y 、 C 、 OFF
Y LEVEL	000~015
C LEVEL	000~015

NR MODE:

Y/C: Select to enable the automatic DNR mode.

Y LEVEL: Select to set up the the Y filter strength.

C LEVEL: Select to set up the C filter strength.

OFF: Select to disable the NR function.

4.2.7 PIC ADJUST

MIRROR	ON / OFF
BRIGHTNESS	000~255
CONTRAST	000~255
SHARPNESS	000~255
HUE	000~255
GAIN	000~255

4.2.8 NEXT

Enter to the next page.

4.2.9 EXIT

Exit the OSD Setup Menu.

4.2.10 SAVE ALL

After configuring the camera settings, press the Joystick to save all settings.

4.2.11 DAY/NIGHT

- AUTO**

AUTO	BURST : ON/OFF
	DELAY CNT : 000~255
	DAY→ NIGHT : 000~255
	NIGHT → DAY : 000~255

BURST: Selects whether to output the burst signal when under Night status has been identified.

DELAY CNT: Set the Night/ Day identification transfer time (Default: 4Sec.).

DAY→ NIGHT: Set the threshold for identifying the Night status from the Day status.

NIGHT → DAY: Set the threshold for identifying the Day status from the Night status.

- COLOR**

Day mode forcibly.

- B/W**

B/W	BURST : ON/OFF
	IR OPTIMIZER : ON/OFF
	MODE : CENTER/AUTO
	LEVEL : 000~031

BURST: Selects whether to output the burst signal.

IR OPTIMIZER: The IR Optimizer function makes it possible to minimize this overexposure by optimizing the exposure control during Night operations.

MODE: Set the IR OPTIMIZER operating mode.

LEVEL: Adjusts the reference level of the IR Optimizer (Default: 5).

- **EXT1**

DN_IN 0[h]: Night mode 1[h]: Day mode

- **EXT2**

DN_IN 0[h]: Day mode 1[h]: Night mode

4.2.12 PRIVACY

- **OFF**

Select to disable the Privacy function.

- **ON**

AREA SEL	Max. 8
TOP	000~244 (NTSC) / 000~288(PAL)
BOTTOM	000~244 (NTSC) / 000~288(PAL)
LEFT	600TVL : 000~378 (NTSC) 、 000~370 (PAL) 700TVL : 000~474 (NTSC) 、 000~468 (PAL)
RIGHT	600TVL : 000~378 (NTSC) 、 000~370 (PAL) 700TVL : 000~474 (NTSC) 、 000~468 (PAL)
COLOR	1~8
TRANSP	0.00 / 0.50 / 0.75 / 1.00
MOSAIC	ON / OFF

AREA SEL: Select the mask frame for adjustment.

TOP: Set the selected top side of the mask frame.

BOTTOM: Set the selected bottom side of the mask frame.

LEFT: Set the selected left side of the mask frame.

RIGHT: Set the selected right side of the mask frame.

COLOR: Set the selected colors of the mask frames (1~8).

TRANSP: Set the transparency ratio of the mask frames (0/ 0.5/ 0.75/ 1).

MOSAIC: Set the mask frame mosaic function to ON or OFF.

Note: When the MONITOR AREA has been set to ON by the MOTION DET setting, only 4 PRIVACY AREA SEL are selectable (1/4, 2/4, 3/4, 4/4).

4.2.13 MOTION DET

DETECT SENSE	000~127
BLOCK DISP	ON / OFF / ENABLE
MONITOR AREA	ON / OFF
AREA SEL	1~4
TOP	000~244 (NTSC) / 000~288(PAL)
BOTTOM	000~244 (NTSC) / 000~288(PAL)
LEFT	600TVL : 000~378 (NTSC) 、 000~370 (PAL) 700TVL : 000~474 (NTSC) 、 000~468 (PAL)
RIGHT	600TVL : 000~378 (NTSC) 、 000~370 (PAL) 700TVL : 000~474 (NTSC) 、 000~468 (PAL)

DETECT SENSE: Set the motion detection sensitivity.

BLOCK DISP: Control the ON/ OFF status of the motion detection block display.

MONITOR AREA: Set whether to use the monitoring frames.

AREA SEL: Select the monitoring frame for setup.

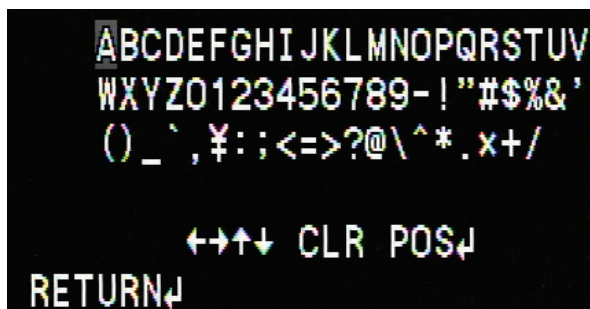
TOP: Set the selected top side of the monitoring frame.

BOTTOM: Set the selected bottom side of the monitoring frame.

LEFT: Set the selected left side of the monitoring frame.

RIGHT: Set the selected right side of the monitoring frame.

4.2.14 CAMERA ID



ABCDEFGHIJKLMNOPQRSTUVWXYZ WXYZ0123456789-!"#\$%&' ()_` , ¥ : ; < = > ? @ \ ^ * . x + /		Each User Font
← → ↑ ↓	The camera ID cursor moves in the direction of the arrow when the Enter operation input is performed from the status in which ←, →, ↑ or ↓ has been selected using the character selection cursor.	
CLR	The character selected by the camera ID cursor is cleared when the Enter operation input is performed from the status in which CLR has been selected using the character selection cursor.	
POS	The display switches to the camera ID display position setting screen when the Enter operation input is performed from the status in which POS has been selected using the character selection cursor. On the camera ID display position setting screen, the camera ID display position is changed in real time in response to the left, right, up or down operation input. When the Enter operation input is performed, the display position is entered, and the display returns to the camera ID setting screen.	

4.2.15 SYNC

- **INT:** Internal frequency synchronization.

4.2.16 LANGUAGE

8 Selectable languages: English / Japanese / German / French / Russian / Portuguese / Spanish / Simplified Chinese.

4.2.17 CAMERA RESET

Reset the camera to the factory default settings.

4.2.18 BACK

Return to MAIN MENU, page1.

4.2.19 EXIT

Exit the OSD Setup Menu.

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